REMARKS

Claims 37-48, 61, and 62 are pending, with claims 37, 61, and 62 being independent. Claims 37, 61, and 62 have been amended. Support for the amendments can be found in the specification, at least at page 9, line 10 to page 10, line 22; page 38, line 7 to page 40, line 3; and Figs. 1A-1C and 12B. No new matter has been introduced.

Claims 37-44, 46-48, 61, and 62 have been rejected as being unpatentable over U.S. Patent No. 5,821,138 (Yamazaki '138) in view of JP 08-288522 (Yamazaki '522) and JP 08-293598 (Yoshikazu). Applicant requests withdrawal of this rejection because neither Yamazaki '138, Yamazaki '522, Yoshikazu, nor any proper combination of the three describes or suggests forming an impurity region that is in parallel with a grain boundary in a crystalline semiconductor film, where such grain boundary extends from a source region to a drain region, as recited in claim 37, and forming a pinning region that is in parallel with a grain boundary in a crystallized semiconductor film, where such grain boundary extends from a source region to a drain region, as recited in claims 61 and 62.

Yamazaki '138 relates to a method of manufacturing a semiconductor device in which a peel-off layer is formed on a quartz substrate 301 and a silicon oxide film 303 is formed on a surface of the peel-off layer 302. See Yamazaki '138 at col. 15, lines 45-65 and Fig. 11A. A thermal oxide film 307 is formed from another heating treatment and the thermal oxide film 307 is removed through etching to obtain a crystalline silicon film 308 that can be etched to form an active layer 309 of a thin film transistor. See Yamazaki '138 at col. 16, line 64 to col. 18, line 34 and Figs. 11D-11F. As the Examiner agrees, Yamazaki '138 fails to describe or suggest forming an impurity region or a pinning region that extends between a source region and a drain region of the thin film transistor. Moreover, Yamazaki '138 also fails to describe or suggest a grain boundary that extends from the source region to the drain region of the thin film transistor.

Yamazaki '522 relates to a process of making a liquid crystal display that includes forming an amorphous silicon film 104 on an insulating layer 103 and heat-treating to obtain a crystalline silicon film 107. See Yamazaki '522 at paragraphs 0014-0016 and Figs. 1A-D. The crystalline silicon film 107 is made into a barrier layer to form a thin film transistor. See

Yamazaki '522 at paragraph 0016 and Fig. 2A. As the Examiner agrees, Yamazaki '522 fails to describe or suggest forming an impurity region or a pinning region that extends between a source region and a drain region of the thin film transistor. Moreover, Yamazaki '138 also fails to describe or suggest a grain boundary that extends from the source region to the drain region of the thin film transistor.

Yoshikazu does not remedy the failures of Yamazaki '138 and Yamazaki '522 to describe or suggest this subject matter. Yoshikazu relates to a process for forming an NMOSFET on a surface of a substrate 1. See Yoshikazu at abstract and Fig. 2. The NMOSFET includes a source region 4A and a drain region 4B isolated at a channel region with divided channel impurity regions 7 provided on the channel region of the surface of the substrate 1 between the regions 4A and 4B. See Yoshikazu at abstract and Fig. 2. However, Yoshikazu never describes or suggests that the impurity region 7 is substantially in parallel with a grain boundary in a crystalline semiconductor film. Nor does Yoshikazu ever describe or suggest that a grain boundary that is in parallel with the impurity regions 7 would extend from the source region 4A to the drain region 4B. Rather, Yoshikazu merely explains that a "plurality of divided channel impurity regions 7 are provided in a dotlike plane manner on the channel region of the surface of the substrate 1" without any discussion of the placement of the impurity region 7 relative to a grain boundary or of the shape or extent of the grain boundary. See Yoshikazu at abstract, paragraphs 0031-0035 and Fig. 2.

For at least these reasons, claims 37, 61, and 62 are allowable over any proper combination of Yamazaki '138, Yamazaki '522, and Yoshikazu, as are dependent claims 38-44 and 46-48.

Claim 45 has been rejected as being unpatentable over Yamazaki '138 in view of Yamazaki '522, Yoshikazu, and U.S. Patent No. 5,843,811 (Singh). Claim 45 depends from 37, which was rejected as being unpatentable over Yamazaki '138 in view of Yamazaki '522 and Yoshikazu. As discussed above, neither Yamazaki '138, Yamazaki '522, Yoshikazu, nor any proper combination of the three describes or suggests forming an impurity region that is in

parallel with a grain boundary in a crystalline semiconductor film, where such grain boundary extends from a source region to a drain region, as recited in claim 37.

Singh does not remedy the failure of these references to describe or suggest this subject matter. In Singh, a crystalline thin film is fabricated from an amorphous thin film that has been deposited onto a backing substrate. See Singh at col. 2, line 44 to col. 3, line 17. However, Singh never describes or suggests that an impurity region is formed that is substantially in parallel with a grain boundary in the crystalline thin film or that such grain boundary would extend from a source region to a drain region. Accordingly, claim 37 is allowable over any proper combination of Yamazaki '138, Yamazaki '522, Yoshikazu, and Singh, as is dependent claim 45.

In conclusion, applicant submits that all claims are in condition for allowance.

It is believed that no fee is due. Nevertheless, please apply any charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: May 8, 2007

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